

Fiscal Impact Statement

Associated with the

Notice of Intended Action

Chemical Criteria Revisions - Water Quality Standards (Chapter 61)

Prepared by the

Department of Natural Resources

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Fiscal Impact Statement

Introduction: This Fiscal Impact Statement (FIS) will provide the projected costs and potential benefits associated with the proposed rule changes being addressed in the Notice of Intended Action, Chemical Criteria Revisions – Water Quality Standards (Chapter 61). This rule-making effort is the most recent effort of the triennial review of Iowa's Water Quality Standards and is a part of the IDNR's Time Lines for Water Quality Standards Modifications that includes the following topics:

- Change the current numerical criteria for 20 chemical parameters to protect aquatic life for the following designations: Class B(WW-1), Class B(WW-2), and Class B(WW-3).
- Change current numerical criteria to protect human health for 42 chemical parameters for Class HH – Human Health.
- Add the chemical parameter aldrin to Table 1 to protect aquatic life.

This evaluation will discuss the fiscal impacts for 3 topics together and provide a summary of the fiscal impacts for the entire rule-making effort. It is important to note that department staff did not evaluate the specific individual impacts or treatment needs for each wastewater treatment facility noted in the FIS. Basic assumptions and evaluations were made on the general impacts on all facilities predicted to be affected. The specific individual impacts and needs will be best evaluated by the facility's staff or retained consultant. Innovative or unique treatment methods may be available to some facilities thereby reducing specific costs.

The number of facilities expected to be impacted is an approximation based on the information available in the NPDES database that is continually updated.

Aquatic Life and Human Health Criteria Changes: The Notice of Intended Action is proposing to revise the current chemical criteria for aquatic life in 567 – 61.3(3), Table 1. Specifically, 21 parameters are being revised to protect aquatic life for the Class B(WW-1), Class B(WW-2), and Class B(WW-3) designations. These parameters include: aldrin, arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, zinc, cyanide, chlordane, 4,4'-DDT, endosulfan, heptachlor, heptachlor epoxide, polychlorinated biphenyls (PCBs), toxaphene, aluminum, and chlorine.

For Class HH – Human Health, 42 parameters are being revised to protect human health. These parameters include: aldrin, antimony, arsenic (III), benzene, benzo(a)pyrene, bromoform, carbon tetrachloride, chlordane, chlorobenzene, chlorodibromomethane, cyanide, 4,4'-DDT, para-dichlorobenzene, 3,3-dichlorobenzidine, dichlorobromomethane, 1,2-dichloroethane, 1,1-dichloroethylene, 1,2-trans-dichloroethylene, 1,2-dichloropropane, bis(2-ethylhexyl)phthalate, dieldrin, 2,3,7,8-TCDD(dioxin), endosulfan, endrin, ethylbenzene, heptachlor, heptachlor epoxide, hexachlorobenzene, gamma-BHC(lindane), hexachlorocyclopentadiene, lead, nickel, polynuclear aromatic hydrocarbons (PAHs), pentachlorophenol (PCP), polychlorinated biphenyls (PCBs), phenols, tetrachlorethylene, thallium, toluene, toxaphene, trichloroethylene (TCE), vinyl chloride, and zinc.

These revisions will reflect the Environmental Protection Agency's national criteria. In most cases, this will result in more stringent chemical criteria for these parameters.

A. Projected Costs: First, it should be noted that the department does not anticipate any cost to the state or any of its agencies as a result of these revisions, but does anticipate an impact to cities and industry.

Determining the projected costs of these chemical criteria revisions will need to consider a multitude of factors. The first factor is to determine who may be impacted by the proposed rule. The chemical criteria revisions may affect regulated NPDES point source dischargers. The organic chemical compounds, such as toxaphene and endosulfan, are not expected to have a fiscal impact for point sources as there are no known point sources in Iowa that commonly or knowingly discharge these pollutants in their effluent. The potential impact will likely be attributed to the changes of the criteria for metals such as arsenic, copper, lead, and zinc.

Relatively speaking, a smaller percentage of NPDES regulated entities monitor and have limits for metals. These facilities are typically industries that work regularly with metal such as metal finishers and electroplaters. There are approximately 139 total private companies in the State of Iowa that are in the general business of metal finishing. None of these companies discharge directly to a water of the state. Rather their process wastewater effluent is discharged to the municipal sanitary sewer which is then “processed” at the municipal wastewater treatment plant. These companies are required to have a signed treatment agreement with the municipality for acceptance of their waste stream. These agreements typically detail the pollutants of concern and establish limits that the company is not to exceed.

The companies may or may not treat their process wastewater depending on the details of their process and limits established in the treatment agreement with the municipality. Typically small amounts of water are used in the metal finishing process and will constitute a small percentage of the total raw wastewater traveling to the municipal wastewater treatment plant. DNR staff determines whether or not there is a reasonable potential for the pollutants discharged from the company to cause a water quality concern for all the pollutants that are eventually discharged to a water of the state. Though not common, the department will identify potential water quality concerns for a specific pollutant and establish monitoring and limits for that pollutant into the municipality’s NPDES permit. Only 29 municipalities have metal limits and monitoring resulting from these reasonable potential determinations. It should be noted that 94 of the total 139 metal finishers discharge to major cities that possess multiple treatment agreements under the NPDES pretreatment program. Of the 29 municipalities that have metals limits, 9 are pretreatment cities, 16 are smaller municipalities with one or two metal finishers in town, and 4 are municipalities that have elevated metal concentrations due to other sources not associated with industrial contributors.

While metal finishing is the most common contributor of metals to municipalities there are many other industrial contributors, but in smaller numbers. These industries can include, but are not limited to landfills, power plants, and pharmaceutical manufacturing. Overall, there are 111 NPDES permits that contain metals monitoring and limits. 43 of these permits are for individually permitted industries while the remaining 68 permits are for municipalities that receive industrial wastewater.

The proposed revisions to the chemical criteria will result in more stringent permit limits for nearly all metals. The question is whether or not these changes will force an industry to install treatment, upgrade its facilities or change its process. It is generally accepted by the department that if the industry already has an active treatment system for metals removal that compliance with more stringent limits will still be achievable. In several instances, many dischargers of metals do not possess any level of treatment as the volume of process wastewater in relation to the overall municipal raw waste influent stream, the assimilative capacity of the receiving stream, and the

conservative reasonable potential determination can demonstrate there are no water quality concerns.

If the current metals limits become more stringent in NPDES permits as a result of the criteria revisions, then it is logical to conclude that the reasonable potential that a water quality concern will occur increases. This will result in more facilities having to monitor and meet limits for an array of metals. Furthermore, it can be concluded that reasonable potential calculations based on the previous criteria that demonstrated no water quality concerns may change and could possibly demonstrate water quality concerns based on the revised criteria. This will likely increase the monitoring for metals in these permits.

The approach to determining cost for additional sampling and monitoring for metals will be conservative. An Inductively Coupled Plasma (ICP) scan is a laboratory method for testing a suite of metals. The ICP typically costs \$35 to run. 20 of the 58 total municipalities that are not pretreatment cities currently have monitoring and limits for a variety of metals. Some municipalities monitor for several metals while others may monitor for just one with the frequency varying between 1/week to 1/month. The remaining 38 municipalities do not monitor for metals. Using a conservative approach the assumption will be that **ALL** 58 municipalities will be required to run an ICP scan once a week, every week for a year. This potential cost is calculated as follows:

58 municipalities * 52 weeks/year * \$35 = **\$105,560** for a total sampling cost per year.

It is currently assumed that all 139 metal finishers run ICP scans or monitor metals at the required frequency in the treatment agreement as approved by the department. 43 industrial facilities discharge directly to Iowa's surface waters and are individually permitted. It is also currently assumed that all these industries run ICP scans or monitor metals at the required frequency in the NPDES permit issued by the department. New reasonable potential calculations may reveal the need for increased monitoring.

The department has compiled a list of metal working industries that provide treatment compared to others that do not. There are approximately 74 industries in Iowa have an active treatment process for metals removal while 65 do not provide treatment. The department uses the conservative reasonable potential approach to assess water quality concerns. Whether or not the process wastewater is treated is typically a moot point when determining reasonable potential as the worst case scenario effluent quality is considered regardless of the treatment. However, this can be an important factor when determining potential fiscal impacts. The department presumes that facilities that do not provide active treatment are more likely to be fiscally impacted by these rule revisions.

Table 1.
 **Affected Facilities Counts

Count Category	Number of Affected Facilities
Active Industries that work with metal	139
Active Metal Industries that discharge to a pretreatment city	94
Active Metal Industries that discharge to a non-pretreatment city	45
Active Metal industries that provide treatment	74
Active Metal industries that do not provide treatment	65
Cities with metals monitoring & limits	29
--Pretreatment cities w/metals limits	9
--Non-pretreatment cities w/metals limits	16
--Cities w/ metals limits not associated w/industries	4
*Permits that contain metals monitoring & limits	111
*Individually permitted industries w/metals limits	43
*Permits that have a treatment agreement w/metals monitoring & limits	68

*can include non-metal finishing related contributors such as landfills, etc.

**see tables 2, 3 & 4 for the lists of affected facilities

The department conducted preliminary research to provide a more detailed fiscal analysis. The research explored potential implementation scenarios in greater detail to determine exactly how they may be impacted by these revisions. The research summary below discusses the interaction of multiple variables in the industrial wastewater treatment process including specific industrial processes, the types of treatment and pollution prevention measures employed, reported effluent values, new calculated limits via revised wasteload allocations, and implications of stream use designation changes.

B. Research Summary: Rule changes associated with the 2006 water quality standards effort primarily affected municipal treatment plants with respect to only ammonia and bacteria. Ammonia and bacteria loadings in municipal wastewater treatment settings have been widely studied and are fairly consistent among most municipal treatment plants. The same can be said of the treatment alternatives available to address these contaminants. Projected effluent limitations relating to the 2006 water quality standards changes could also be broadly characterized. Thus, general application of cost estimates for projected treatment upgrades to municipal treatment plants relating to the 2006 effort was feasible with minimal effort to study individual facilities on a case-by-case basis.

Unlike municipal wastewater treatment facilities, industries vary significantly in their manufacturing processes and the makeup of their wastewater streams. Treatment costs for a specific set of contaminants (e.g. heavy metals) or a single contaminant (e.g. arsenic or cyanide) can be developed using a number of available reference materials. General application of these estimates to multiple, or

in this instance, hundreds of different facilities is problematic to say the least. There are a number of factors that must be considered to provide a reasonable degree of accuracy to the estimates:

1. What are the constituents of concern for each facility?
2. Does the facility discharge directly to a receiving stream or to a municipal wastewater treatment facility?
3. Which constituents of concern present in the effluent have a reasonable potential to violate the new criteria?
4. What is the effect of the 2006 WQS changes on the previous wasteload allocation (i.e., what are the revised NPDES permit limits considering the revised chemical criteria, changes to the stream designation and elimination of protected flow?)
5. What are the existing effluent levels for each constituent of concern that is discharged under the current NPDES permit?
6. Are the industrial wastewater streams for an individual facility segregated prior to discharge and if so, what are the flow rates for each wastewater stream?
7. Does the facility treat (or pre-treat) its wastewater and if so, what type of treatment technology is utilized?
8. Where a reasonable potential to violate the new criteria exists, is additional treatment necessary or are there alternatives available such as source reduction or recovery to reduce the existing levels in the wastewater stream?
9. What are the influent concentrations for each constituent of concern prior to any existing or anticipated treatment process?

Unfortunately, several of these factors cannot be overcome due to the lack of information that is readily available. In particular Item # 3, reasonable potential to violate the criteria, requires case-by-case analysis for each facility. Without this determination, the overall estimate of cost for all facilities will require an assumption of whether or not additional treatment is required. Based on research for several selected facilities, there is no clear indication that additional treatment will or will not be required for the majority of facilities. In addition, criteria for constituents not currently included in the NPDES permit may be revised such that monitoring, and potentially treatment will be required under the new criteria.

Further compounding this issue is Item # 6, segregation of wastewater streams, and the fact that available cost estimation techniques are dependent upon, and in some cases highly sensitive to, the flow rate of the wastewater stream.

As an example, the City of Charles City accepts industrial wastewater from Fort Dodge Animal Health. Effluent limits for cyanide are included in the City's NPDES permit as a result of this industrial contributor. If it is assumed that additional treatment is required for cyanide destruction (oxidation through alkaline chlorination) then cost estimates can be derived based on the flow included in the City's treatment agreement with the industry. However, this flow may include additional wastewater streams that do not include cyanide. If it is assumed that the entire wastewater stream (394,000 gallons per day for Fort Dodge Animal Health) must be treated to remove cyanide, capital and annual

operating and maintenance costs of \$1.2 million and \$41 million are estimated, respectively (derived from EPA 821-R-95-002). These costs are estimated assuming an influent cyanide concentration of 1.5 mg/L and the annual operating cost estimate is extremely sensitive to the flow rate due to chemical costs for sodium hypochlorite and sodium hydroxide. Actual influent concentrations are not reported to IDNR and presumably, any process waste stream containing cyanide may be segregated from the total wastewater flow records available to IDNR.

Thus, the cost estimate using readily available information is likely to be greatly exaggerated. Furthermore, if the monthly operating data from Charles City is analyzed in detail, and if revised effluent limits for the City based on the proposed criteria for cyanide are calculated, it does not appear that the existing levels of cyanide present in the municipal plant effluent would violate the proposed criteria. Therefore, the cost estimated to meet the new criteria ranges from \$0 to over \$41 million per year depending on whether or not the facility is evaluated on an individual basis or generally assumed to require treatment.

Based on evaluation of several potentially affected facilities which do employ treatment, it is anticipated that costs will be significant for certain individual facilities. Industries that discharge metals to small receiving streams possess the highest potential for adverse fiscal impacts. However, any attempt at broadly estimating a statewide cost for all potentially affected facilities with data that is readily available will present a range in costs so wide as to be effectively meaningless. The overall costs statewide cannot be estimated with any degree of accuracy due to the absence of readily available information to thoroughly research the multitude of variables that will affect whether or not treatment improvements (or process modifications) are required and if so, to what degree they are required.

C. Anticipated Benefits. The anticipated benefits from revising the chemical criteria are associated with the potential improvements to: instream conditions for aquatic and semiaquatic life, wildlife and livestock watering needs, and aesthetic conditions. Common anticipated benefits will apply to the streams designated as Class B(WW-1, 2 or 3) or Class HH currently receiving wastewater discharges, but also waters receiving any future discharge of wastewater containing these pollutants. The benefits in the nature of projected improvements to instream water quality below wastewater treatment discharges would be derived from the construction of the treatment improvements or process modifications to comply with the numerical criteria in the Water Quality Standards. None of these potential benefits has a readily identifiable monetary value and thus will not be estimated in this impact statement.

D. Other Potential Impacts. There may be impacts associated with uncontrolled sources of pollution not associated with industrial process wastewater contributions. Elevated copper levels have been noted in some municipal treatment plant effluent where no industrial contributions are known to exist. It is expected these elevated levels are due to the prevalence of copper pipe used in residential plumbing. The copper can enter the waste stream due to the corrosion of the household plumbing. More facilities may now have a reasonable potential to violate the new copper criteria and may require monitoring and limits. It is not possible to accurately determine what the fiscal impact of this scenario may be, but the discussion serves to flag this potential issue.

Another uncontrolled source can be from mercury entering Iowa's surface waters from atmospheric deposition. More stringent criteria for mercury may result in additional impaired waters. Achieving compliance with this standard for certain water bodies may be difficult due to inability to accurately pinpoint the source of mercury. This is a national problem that has not necessarily affected Iowa in a water quality sense, but with this criteria becoming more stringent it may become a more prevalent issue.

E. Anticipated Implementation Approach: The Department recognizes that the implementation of these proposed rules and rule changes may have extensive economic impacts. Historically, compliance with the provisions of the federal Clean Water Act has carried a significant price tag and will continue to be costly as requirements and guidelines are reaffirmed. It is the goal of the Department to implement these proposed rules in a reasonable, practicable, and responsible manner. Thus, the implementation will be linked to the reissuance of each facility's NPDES permit. All available NPDES provisions and consideration will be made to allow adequate time for each facility to comply with the adopted rules according to their time constraints, economic abilities, and source of financial aid.

Table 2.
Pretreatment Cities with Metal Industries

<u>CITY NAME</u>	<u>INDUSTRY</u>	<u>TYPE OF INDUSTRY</u>
AMES	INDUSTRIAL PLATING CO.	ELECTROPLATING
ANKENY	D&J PLATING INC	METAL FINISHING
	JOHN DEERE DES MOINES WORKS	METAL FINISHING
BURLINGTON	CNH AMERICA LLC (FMR CASE CORP.)	METAL FINISHING
	CSI LIMITED	METAL FINISHING
	FEDERAL MOGEL	METAL FINISHING
	FLINT CLIFFS MANUFACTURING, CORP.	METAL FINISHING
	RILEY INDUSTRIAL PAINTING	METAL FINISHING
	WINEGARD COMPANY	METAL FINISHING
CEDAR FALLS	BRUNS MACHINE SHOP	METAL FINISHING
	CEDAR VALLEY ELECTROPLATING	METAL FINISHING
	METOKOTE CORPORATION	METAL FINISHING
	STANDARD GOLF CO.	METAL FINISHING
	UNIVERSAL INDUSTRIES	METAL FINISHING
	UNVERFERTH MANUFACTURING	METAL FINISHING
CEDAR RAPIDS	ELECTRO-COATINGS INC.	ELECTROPLATING
	EVERGREEN PACKAGING EQUIPMENT	METAL FINISHING
	IN TOLERANCE CONTRACT MFG.	METAL FINISHING
	LANGER MANUFACTURING CO.	ELECTROPLATING
	MIDWEST METAL PRODUCTS CO.	METAL FINISHING
	PMX INDUSTRIES, INC.	COPPER FORMING, NONFERROUS METALS, AND IRON AND STEEL MANUFACTURING
	ROCKWELL INTERNATIONAL, AVIONICS DIVISION	METAL FINISHING
	SCHNEIDER ELECTRIC (FMR SQUARE D COMPANY)	METAL FINISHING
COUNCIL BLUFFS	METOKOTE CORP. PLANT 17 (FMR OMAHA STANDARD)	METAL FINISHING
DAVENPORT	ALCOA, INC.	ALUMINUM FORMING
	ARCH ALUMINUM & GLASS CO., INC.	METAL FINISHING
	AVG AUTOMATION/UTICOR TECHNOLOGY L.P.	METAL FINISHING
	BLACKHAWK FOUNDRY AND MACHINE COMPANY	METAL MOLDING AND CASTING
	CARLETON LIFE SUPPORT	METAL FINISHING
	HEARTLAND PLATING, INC. (FMR PRIME PLATING, INC.)	ELECTROPLATING
	JOHN DEERE DAVENPORT WORKS	METAL FINISHING
	LECLAIRE MANUFACTURING COMPANY	METAL MOLDING AND CASTING
	NICHOLS ALUMINUM CASTING	ALUMINUM FORMING
	NICHOLS ALUMINUM PAINTING	ALUMINUM FORMING
	QUAD CITIES POWDER COATING	METAL FINISHING
	SEARS MANUFACTURING COMPANY	METAL FINISHING
	SIVYER STEEL CORPORATION	METAL MOLDING AND CASTING
	THE SCHEBLER COMPANY	METAL FINISHING
DES MOINES	BARRETT PLATING, INC	METAL FINISHING
	CHROME REFLECTIONS	METAL FINISHING
	DEE ZEE, INC.	METAL FINISHING
	FAIRPLAY (TRANS-LUX) CORP.	METAL FINISHING
	FAWN ENGINEERING CORP.	METAL FINISHING
	PERFORMANCE POWDER COATING, INC.	METAL FINISHING
	PORTER BOWERS SIGN CO., INC.	METAL FINISHING

	QUALITY MANUFACTURING CORPORATION	METAL FINISHING
	SCHEELS ALL SPORTS	METAL FINISHING
	SMART INDUSTRIES	METAL FINISHING
	TURBINE FUEL TECHNOLOGIES	METAL FINISHING
DUBUQUE	AUTOMOTIVE INDUSTRIAL HARDWARE	METAL FINISHING
	BARNSTEAD INTERNATIONAL	METAL FINISHING
	EAGLE WINDOW & DOOR	METAL FINISHING
	FLEXSTEEL INDUSTRIES METAL DIVISION	METAL FINISHING
	KEY CITY PLATING CO.	ELECTROPLATING
	KLAUER MANUFACTURING	METAL FINISHING
FORT DODGE	MIDWEST PLATING	METAL FINISHING
IOWA CITY	LEAR, INC.	METAL FINISHING
MARSHALLTOWN	ACE PRECISION CASTING	METAL MOLDING AND CASTING
	FISHER CONTROLS INTERNATIONAL, INC.	METAL FINISHING
	LENNOX MANUFACTURING INC.	METAL FINISHING
	SPECTRUM POWDER COATING, LLC	METAL FINISHING
MASON CITY	CURRIES (1) DOOR GROUP (FMR ASSA ABLOY DOOR GROUP, LLC)	METAL FINISHING
	CURRIES (2) DOOR GROUP (FMR ASSA ABLOY DOOR GROUP, LLC)	METAL FINISHING
	METALCRAFT INC.	METAL FINISHING
	MINNESOTA RUBBER	RUBBER MANUFACTURING
	WINNEBAGO COUNTY LANDFILL	NA
MUSCATINE	BANDAG PLANT #4	METAL FINISHING
	BT PRIME MOVER, INC.	METAL FINISHING
	HON ALLSTEEL - MUSCATINE COMPONENT PLANT	METAL FINISHING
	HON ALLSTEEL - MUSCATINE PANEL PLANT	METAL FINISHING
	HON ALLSTEEL - OAK STREET	METAL FINISHING
	HON CO.-GENEVA PLANT	METAL FINISHING
	MUSCATINE COUNTY SANITARY LANDFILL	NA
OTTUMWA	JOHN DEERE OTTUMWA WORKS	METAL FINISHING
SIOUX CITY	PRINCE MANUFACTURING	METAL FINISHING
	SIOUX PLATING CO.	METAL FINISHING
WATERLOO	BLACKHAWK COUNTY LANDFILL	NA
	EAGLE OTTAWA	LEATHER TANNING AND FINISHING
	JOHN DEERE - DONALD STREET	METAL FINISHING
	JOHN DEERE ENGINE WORKS	METAL FINISHING
	JOHN DEERE - WESTFIELD AVE.	METAL FINISHING
	METOKOTE CORPORATION	METAL FINISHING
	WELYN ENTERPRISES, INC.	METAL FINISHING

Table 3.

Pretreatment Cities with Metals Limits & Non-Pretreatment Cities with Metals Limits and No Significant Industrial Uses

<u>PRETREATMENT CITIES WITH METALS LIMITS</u>	<u>NON-PRETREATMENT CITIES WITH METALS LIMITS AND NO SIGNIFICANT INDUSTRIAL USERS</u>
BOONE CITY OF STP	ATLANTIC CITY OF STP
CEDAR RAPIDS CITY OF STP	DAVENPORT, CITY OF-WEST LOCUST LAGOON
CLINTON CITY OF STP	NEVADA CITY OF STP
COUNCIL BLUFFS CITY OF STP	SAC CITY, CITY OF STP
FORT DODGE CITY OF STP	
IOWA CITY, CITY OF (NORTH) STP	
IOWA CITY, CITY OF (SOUTH) STP	
MARSHALLTOWN CITY OF WATER POLLUTION CONTROL	
OTTUMWA CITY OF STP	

Table 4.

Non-Pretreatment Cities and their Industries

<u>FACILITY NAME</u>	<u>INDUSTRIAL CONTRIBUTOR</u>	<u>TYPE OF INDUSTRY</u>
ADEL CITY OF STP	MONARCH MANUFACTURING CO	MISCELLANEOUS METAL WORK
ALGONA CITY OF STP	SNAP-ON-TOOLS	METAL FINISHING
ALLISON CITY OF STP	ALLAN INCORPORATED	METAL FINISHING
ANAMOSA CITY OF STP	ANAMOSA STATE PENITENTIARY	PENITENTIARY
BELMOND CITY OF STP	EATON CORPORATION	METAL FINISHING
BOYDEN CITY OF STP	DETHMERS MANUFACTURING COMPANY	METAL FINISHING
CARROLL, CITY OF STP	CARROLL COUNTY SOLID WASTE MANAGEMENT COMMISSION	LANDFILL
CHARLES CITY, CITY OF STP	FT. DODGE ANIMAL HEALTH GROUND WATER CLEANUP FORT DODGE ANIMAL HEALTH	GROUNDWATER CLEANUP SITE PHARMACEUTICAL MANUFACTURING
CLEAR LAKE SANITARY DISTRICT	INTERSTATE POWER AND LIGHT	POWER PLANT
CRESTON CITY OF STP	FANSTEEL/WELLMAN DYNAMICS LANDFILL LEACHATE FANSTEEL/WELLMAN DYNAMICS	LANDFILL METAL FINISHING
DECORAH CITY OF STP	GEMINI, INC. CAMCAR - DECORAH OPERATIONS DECO PRODUCTS	METAL FINISHING METAL FINISHING NON-FERROUS DICASTING
DENISON MUNICIPAL UTILITIES-STP	CRAWFORD COUNTY SOLID WASTE AGENCY	LANDFILL
DEWITT CITY OF STP	GUARDIAN INDUSTRIES CORPORATION	METAL FINISHING
DYERSVILLE CITY OF STP	SPEC CAST	METAL FINISHING
ELDRIDGE CITY OF STP(SOUTH SLOPE)	MEMINGER METAL FINISHING QUAD CITY COATINGS	METAL FINISHING METAL FINISHING
EMMETSBURG CITY OF STP	SKYJACK MANUFACTURING, INC.	METAL FINISHING
FAIRFIELD, CITY OF STP	IES UTILITIES, INC. SEMCO FAIRFIELD ALUMINUM CASTINGS COMPANY THE DEXTER COMPANY	NON-CLASSIFIABLE REFUSE SYSTEMS METAL MOLDING AND CASTING METAL FINISHING
FAYETTE CITY OF STP	FAYETTE COUNTY SOLID WASTE MANAGEMENT COMMISSION	LANDFILL
HOSPERS CITY OF STP	DEN HARTOG INDUSTRIES	METAL FINISHING
HUMBOLDT CITY OF STP	HUMBOLDT COUNTY SANITARY LANDFILL COMMISSION HAWKEYE LEISURE TRAILERS	LANDFILL METAL FINISHING
INDEPENDENCE CITY OF STP	GREATER MACHINING AND MANUFACTURING	METAL FINISHING
INDIANOLA CITY OF STP (NORTH)	SOUTH CENTRAL IOWA LANDFILL AGENCY	LANDFILL
IOWA GREAT LAKES SANITARY DISTRICT STP	POLARIS INDUSTRIES, INC.	METAL FINISHING
JEFFERSON CITY OF STP	FRIGIDAIRIE COMPANY - WCI LAUNDRY DIVISION	INDUTRIAL MACHINERY
KANAWHA CITY OF STP	KIEFER BUILT INDUSTRIES	METAL FINISHING
KEOSAUQUA CITY OF STP	BARKER WIRE PRODUCTS, INC.	METAL FINISHING
KNOXVILLE CITY OF STP	FIVE STAR INDUSTRIES GEORGE A. HORMEL & COMPANY	METAL FINISHING MEAT PRODUCTS, SAUSAGES
LAKE MILLS CITY OF STP	DIELECTRIC CORPORATION FLEETGUARD, INC.	METAL FINISHING METAL FINISHING

LANSING CITY OF STP	NORTHERN ENGRAVING CORPORATION	METAL FINISHING
LAURENS CITY OF STP	PENGO CORPORATION	METAL FINISHING
LISBON CITY OF STP	LLOYD PLATING COMPANY	METAL FINISHING
MAQUOKETA CITY OF STP	GENERAC POWER SYSTEMS, INC.	MOTORS AND GENERATORS
NEW HAMPTON CITY OF STP	TRI MARK CORPORATION, DIVISION OF SEALED POWER	METAL FINISHING
NEWTON CITY OF STP	MAYTAG CO. NORTHEAST MACHINE CENTER	HOUSEHOLD LAUNDRY EQUIPMENT
NORTHWOOD CITY OF STP	ADA ENTERPRISES, INC.	METAL FINISHING

*Those cities that have been bolded contain limits for one or more metals in their final effluent discharge.

Appendix A - References

1. Affected Facilities Spreadsheets
2. US EPA. February 1980. Innovative and Alternative Technology Assessment Manual. Office of Water, Program Operations, Washington, DC.
3. "Detailed Costing Document for the Centralized Waste Treatment Industry" EPA 821-R-95-002. January 1995.
4. "Wastewater Treatment Technology" by James W. Patterson, 1975.
5. "Capital Costs of Arsenic Removal Technologies" EPA 600-R-04-201.
6. "Capital Costs of Arsenic Removal Technologies" EPA 600-R-04-201.
7. "Arsenic Removal from Drinking Water by Adsorptive Media" EPA 600-R-05-159.